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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,952	02/09/2004	Qing Ma	884.804US2	8635
21186	7590	11/01/2005	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH 1600 TCF TOWER 121 SOUTH EIGHT STREET MINNEAPOLIS, MN 55402			DIAZ, JOSE R	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,952

Applicant(s)

MA ET AL.

Examiner

José R. Díaz

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-13 and 23-33 is/are pending in the application.
- 4a) Of the above claim(s) 5,7-10,13 and 23-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-4, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Wachtler et al. (US Pat. No. 6,274,391 B1).

Regarding claim 1, Wachtler et al. teaches a microelectronic package, comprising:

a heat spreader (12) having a first surface (please note that substrate 12 is made of metal. See col. 8, line 14), said heat spreader having at least one recess (14) defined therein by at least one sidewall extending from said heat spreader first surface to a recess bottom surface (see fig. 21);

at least one microelectronic die (16) disposed within said at least one recess, said at least one microelectronic die having an active surface, a back surface, and at least one side (see fig. 21);

a thermally conductive material (adhesive) adhering said at least one microelectronic die back surface to said recess bottom surface (see col. 8, lines 55-57);
and

build-up layers (24, 32, 34) disposed on said microelectronic die active surface and said heat spreader first surface (see fig. 21).

Regarding claims 3 and 11, Wachtler et al. further teaches that said build-up layers comprise at least one dielectric layer (24) abutting said at least one microelectronic die active surface and said heat spreader first surface (see fig. 21) and at least one conductive trace (32, 34) disposed on said at least one dielectric layer (see fig. 21).

Regarding claims 4 and 12, Wachtler et al. further teaches that said at least one dielectric layer (24) is disposed within gaps between said at least one recess sidewall and said at least one microelectronic die side (consider the space formed between die 16 and substrate 12, which is filled with layer 24. See fig. 21 and col. 9, lines 1-3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wachtler et al. (US Pat. No. 6,274,391 B1, previously cited by Applicant) in view of Shibamoto et al. (US Pat. No. 6,563,212 B2, cited in the last Office Action).

Regarding claim 6, Wachtler et al. fails to teach that said thermally conductive material is selected from the group consisting of resin, epoxy, metal and

metal alloys. However, Shibamoto et al. teaches that it is well known in the art to form the adhesive (2) of metal or metal alloy (col. 8, lines 18-19).

Wachtler et al. and Shibamoto et al. are analogous art because they are from the same field of endeavor as applicant's invention. At the time of the invention it would have been obvious to a person of ordinary skill in the art to include an adhesive made of metal or metal alloy. The motivation for doing so, as is taught by Shibamoto et al., is to reducing the thermal resistance between the chip and the heat spreader so that a high heat radiation characteristic can be obtained (col. 8, lines 18-24 and 31-32). Therefore, it would have been obvious to combine Shibamoto et al. with Wachtler et al. to obtain the invention of claim 6.

Response to Arguments

5. Applicant's arguments, see remarks filed August 17, 2005, with respect to the rejection of claims 1 and 6 under 35 USC § 102(b) and the rejection of claims 3-4 and 11-12 under 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of Wachtler et al.

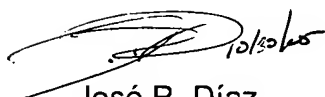
Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R. Díaz whose telephone number is (571) 272-1727. The examiner can normally be reached on Monday through Thursday.

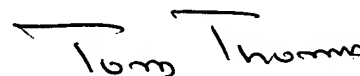
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



José R. Díaz
Examiner
Art Unit 2815



TOM THOMAS
SUPERVISORY PATENT EXAMINER